TRANSIMS Input Editor

B. W. Bush

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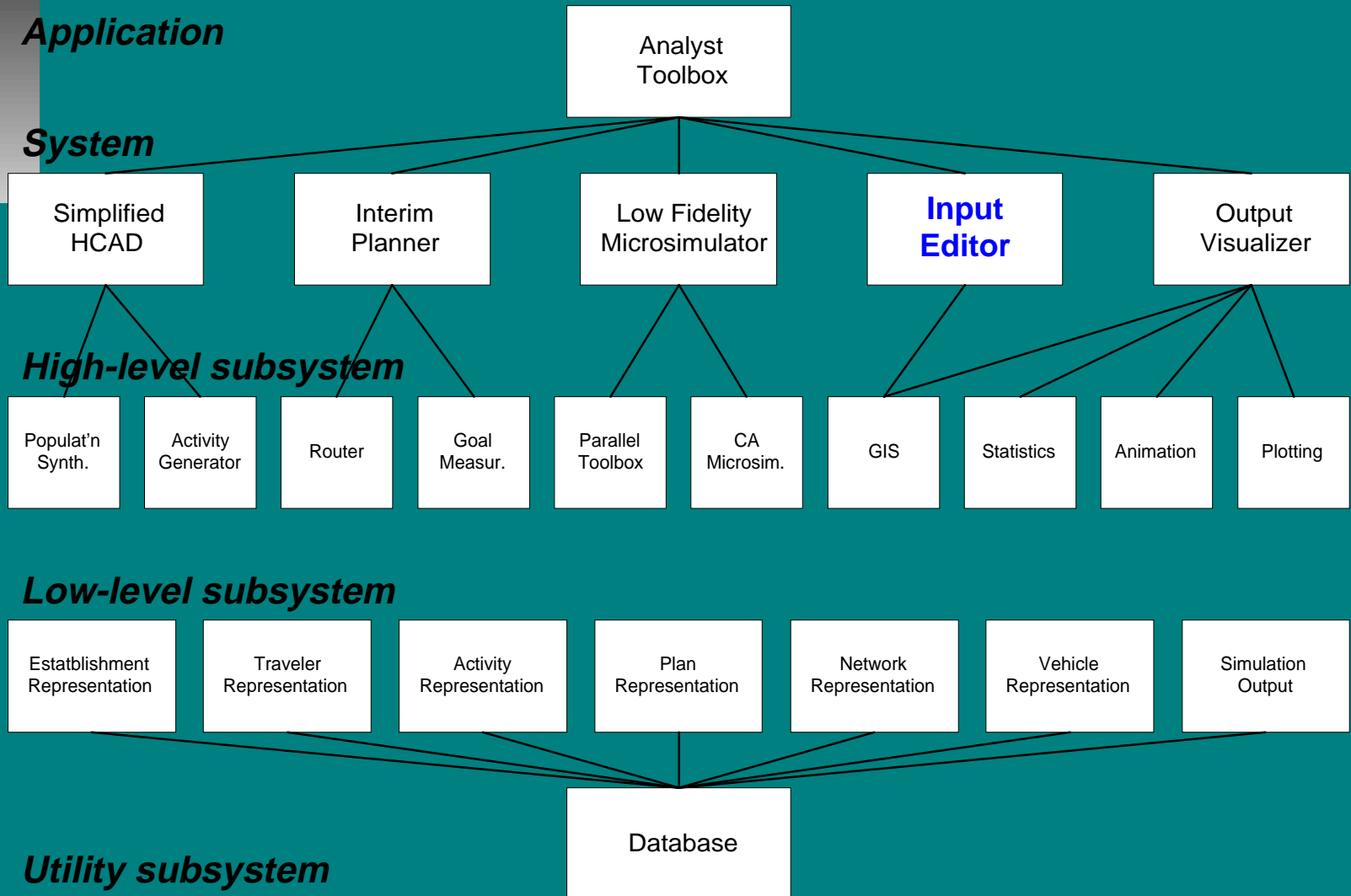
5 August 1996

Abstract

The input editor provides a means for editing the network databases and setting up scenarios for simulation.
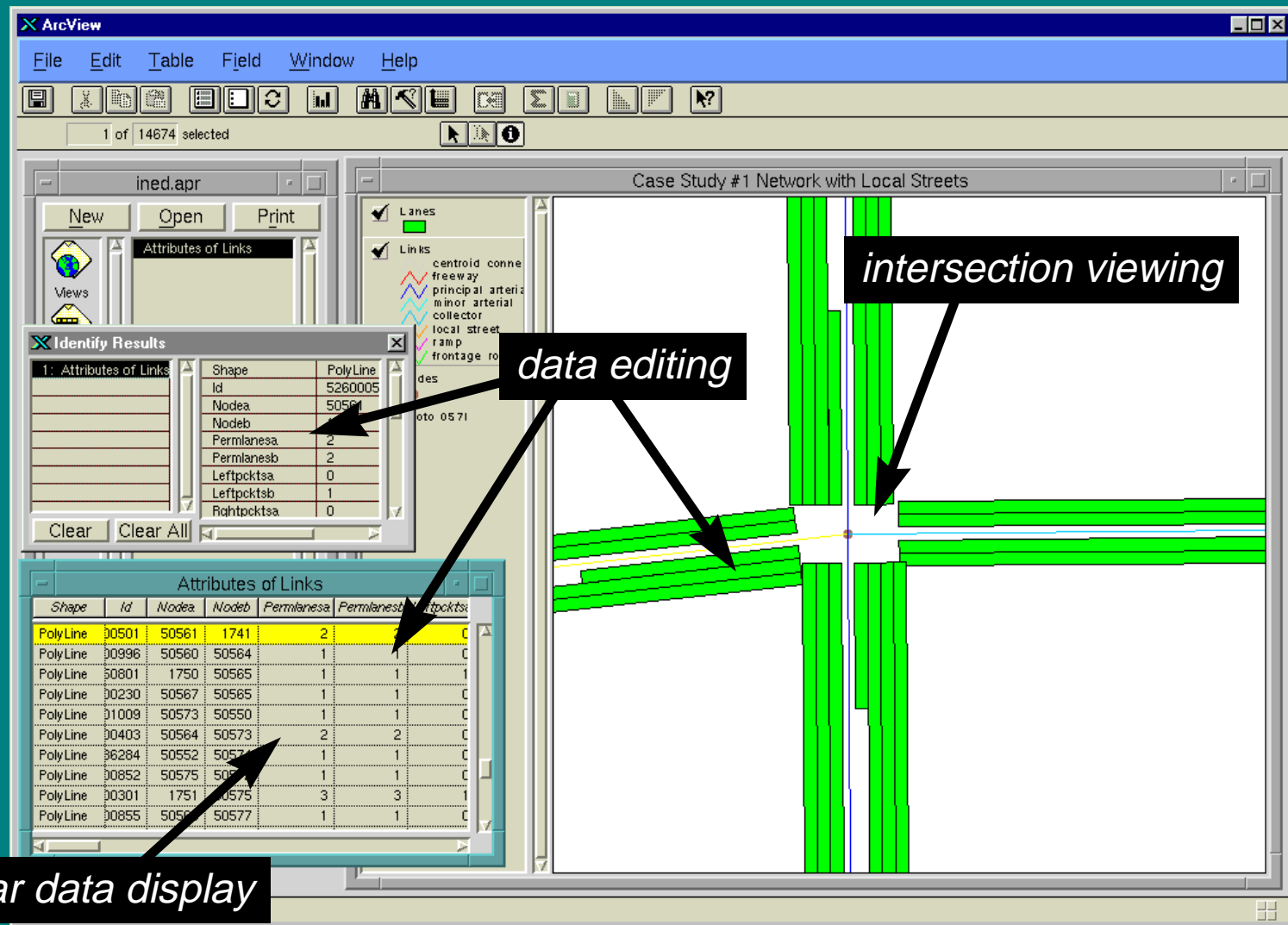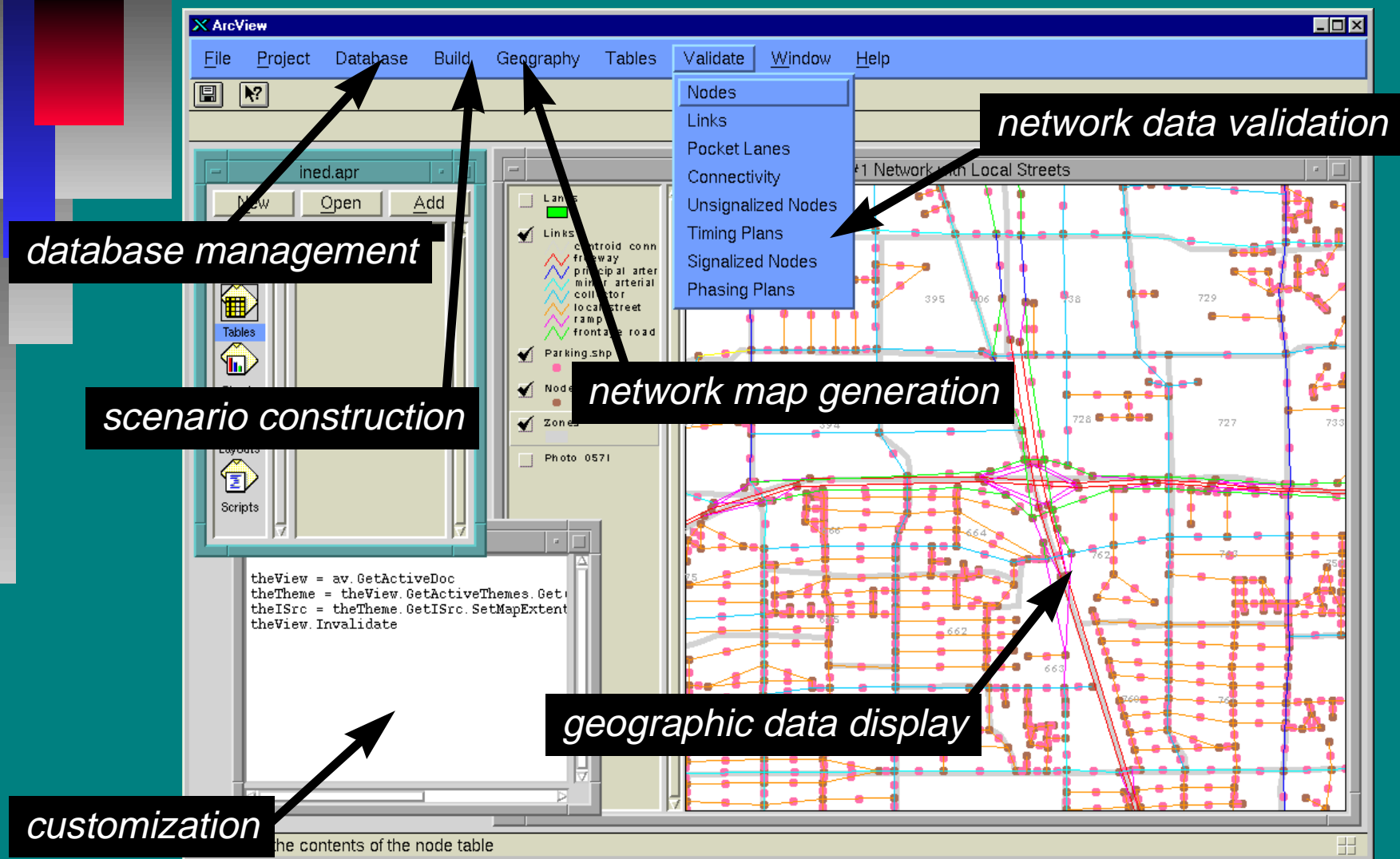
Input Editor System

Application

Analyst Toolbox

System

| Simplified HCAD | Interim Planner | Low Fidelity Microsimulator | **Input Editor** | Output Visualizer |

High-level subsystem

| Populat'n Synth. | Activity Generator | Router | Goal Measur. | Parallel Toolbox | CA Microsim. | GIS | Statistics | Animation | Plotting |

Low-level subsystem

| Estatblishment Representation | Traveler Representation | Activity Representation | Plan Representation | Network Representation | Vehicle Representation | Simulation Output |

Database

Utility subsystem

Input Editor Capabilities

intersection viewing

data editing

tabular data display

Input Editor Capabilities (continued)

network data validation

database management

scenario construction

network map generation

geographic data display

customization

Summary of Input Editor Capabilities

- **data editing**
  - accepts standard file formats (dBase, delimited text, ArcInfo)
  - map- and spreadsheet-style editing of data tables
- **network map generation**
  - converts network data tables into map layers
- **intersection viewing**
  - shows interactively allowed movements for each phase
- **network data validation**
  - writes report listing problems (errors, anomalies, inconsistencies) in network data
  - highlights problems on map and in data tables
- **database management**
  - stores, retrieves, deletes, and views TRANSIMS data tables in the Oracle database
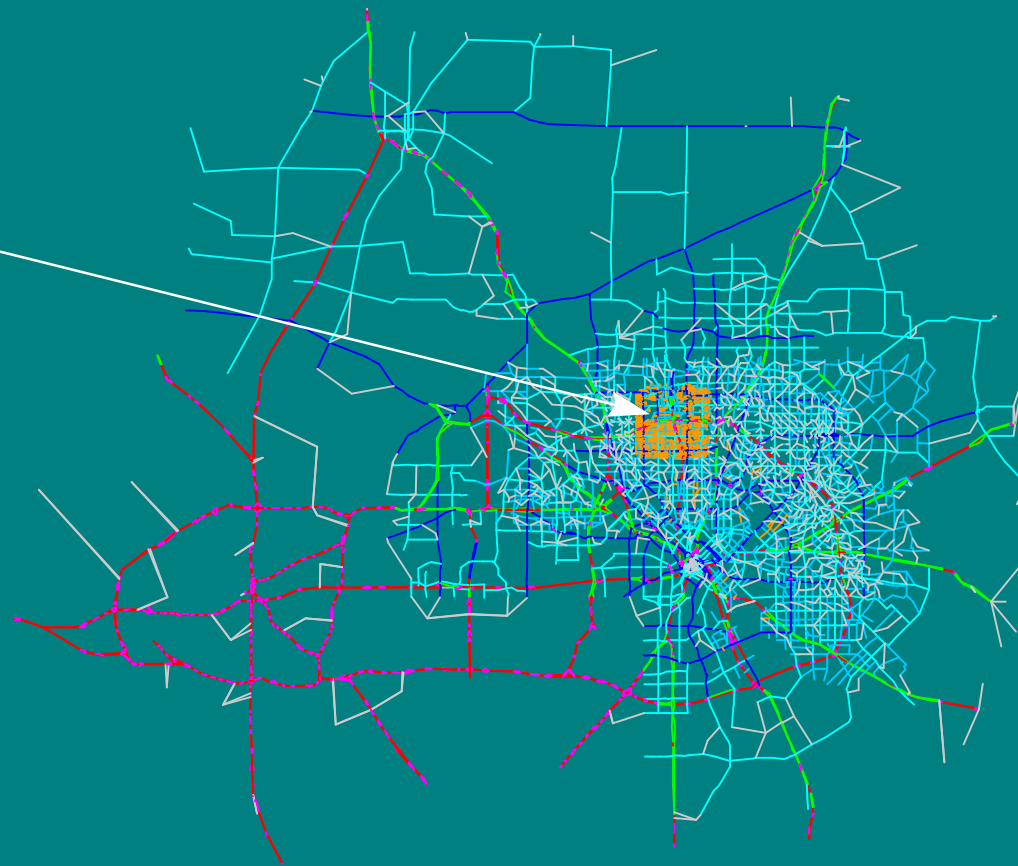- **customizable (i.e., written in ArcView's programming language)**

Case Study #1 Network

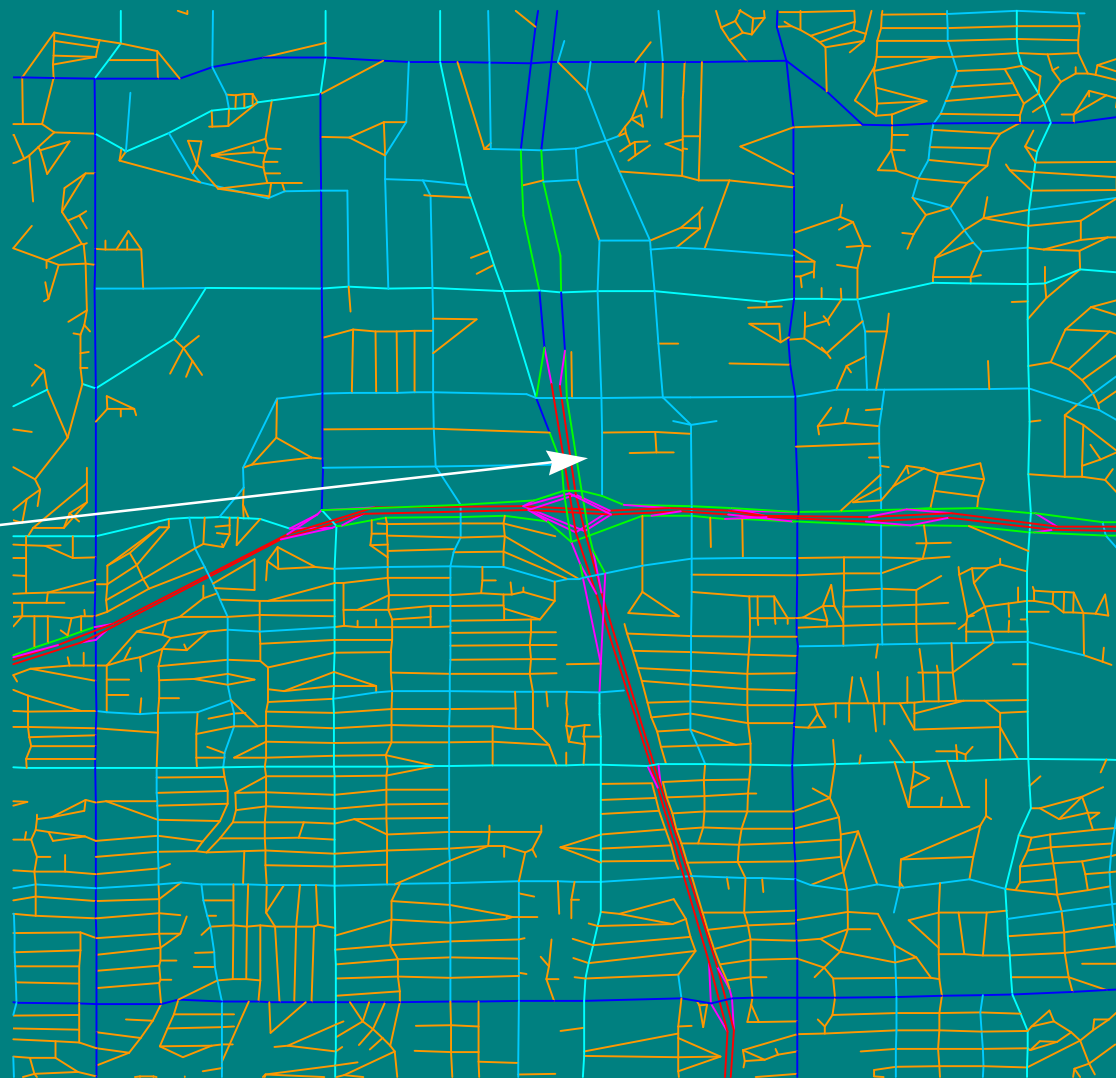## B. W. Bush, L. L. Smith, and NCTCOG
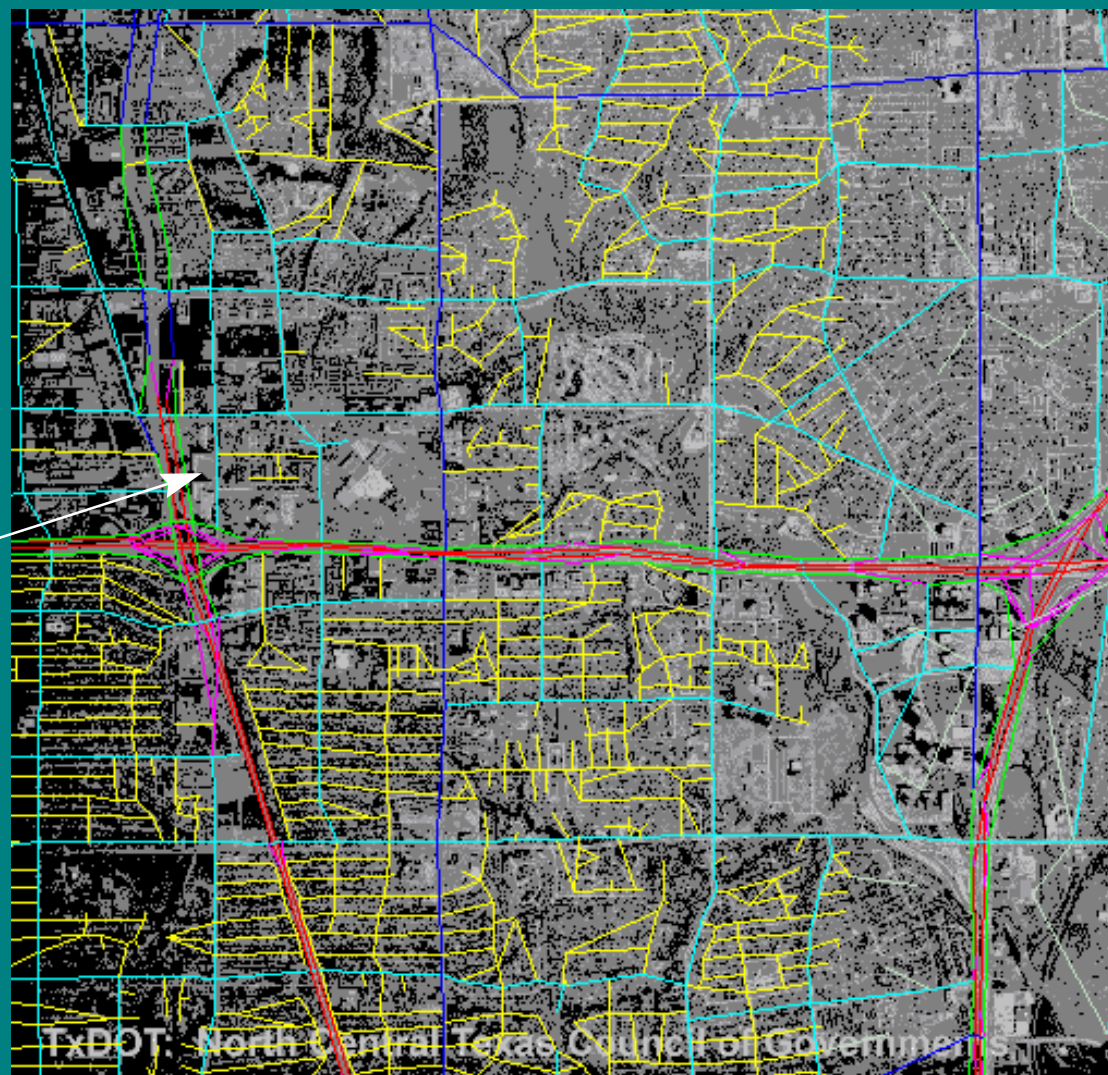### Los Alamos National Laboratory
5 August 1996

Planning Area

study area

Galleria

Galleria

Case Study Network Statistics

	Without Local Streets	With Local Streets
Number of Nodes	8053	9812
Number of Links	12,274	14,674
Length of Links	8713 km	9003 km
Number of Lanes	37,550	43,445
Length of Lanes	26,998 km	27,486 km
Number of Signalized Nodes	93	94
Number of Nodes in Simulation Area	346	[2000]

TRANSIMS Simulation Output

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Los Alamos National Laboratory
5 August 1996

Abstract

The output subsystem collects data from a running microsimulation, stores the data for future use, and manages the subsequent retrieval of the data.

Simulation Output Subsystem

Application

```
                          Analyst
                          Toolbox
```

System

| Simplified HCAD | Interim Planner | Low Fidelity Microsimulator | Input Editor | Output Visualizer |

High-level subsystem

| Populat'n Synth. | Activity Generator | Router | Goal Measur. | Parallel Toolbox | CA Microsim. | GIS | Statistics | Animation | Plotting |

Low-level subsystem

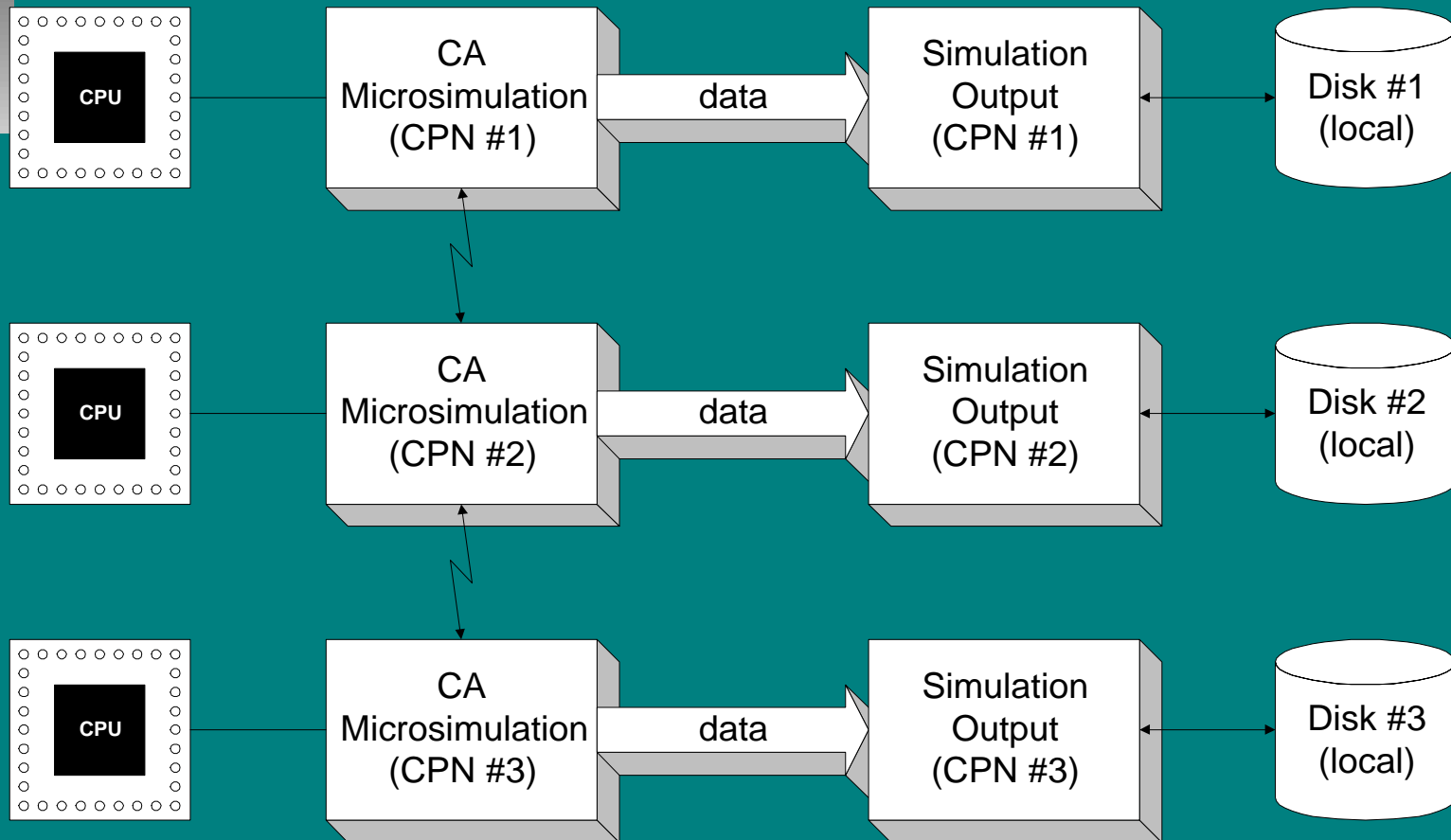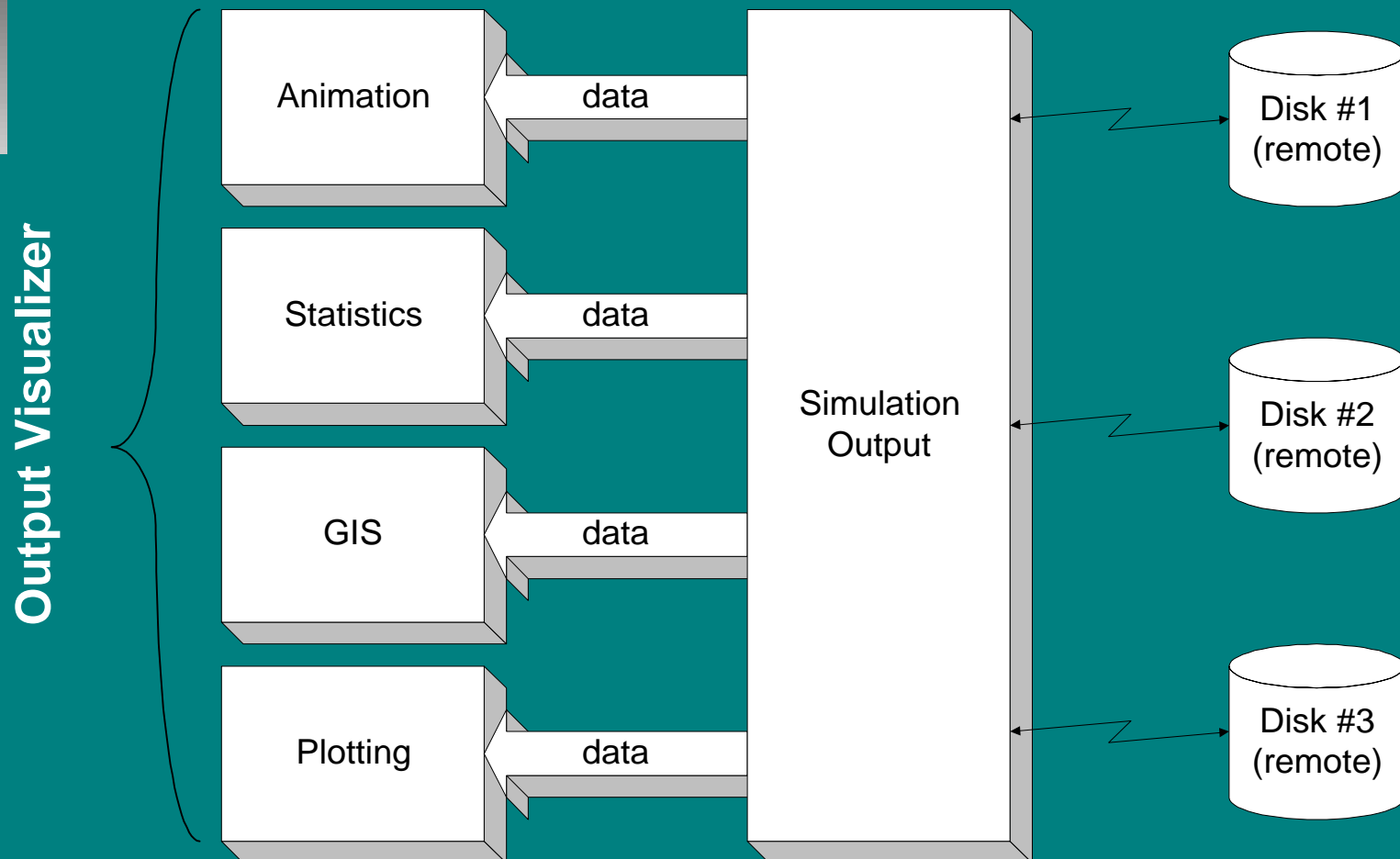| Estatblishment Representation | Traveler Representation | Activity Representation | Plan Representation | Network Representation | Vehicle Representation | **Simulation Output** |

```
                          Database
```
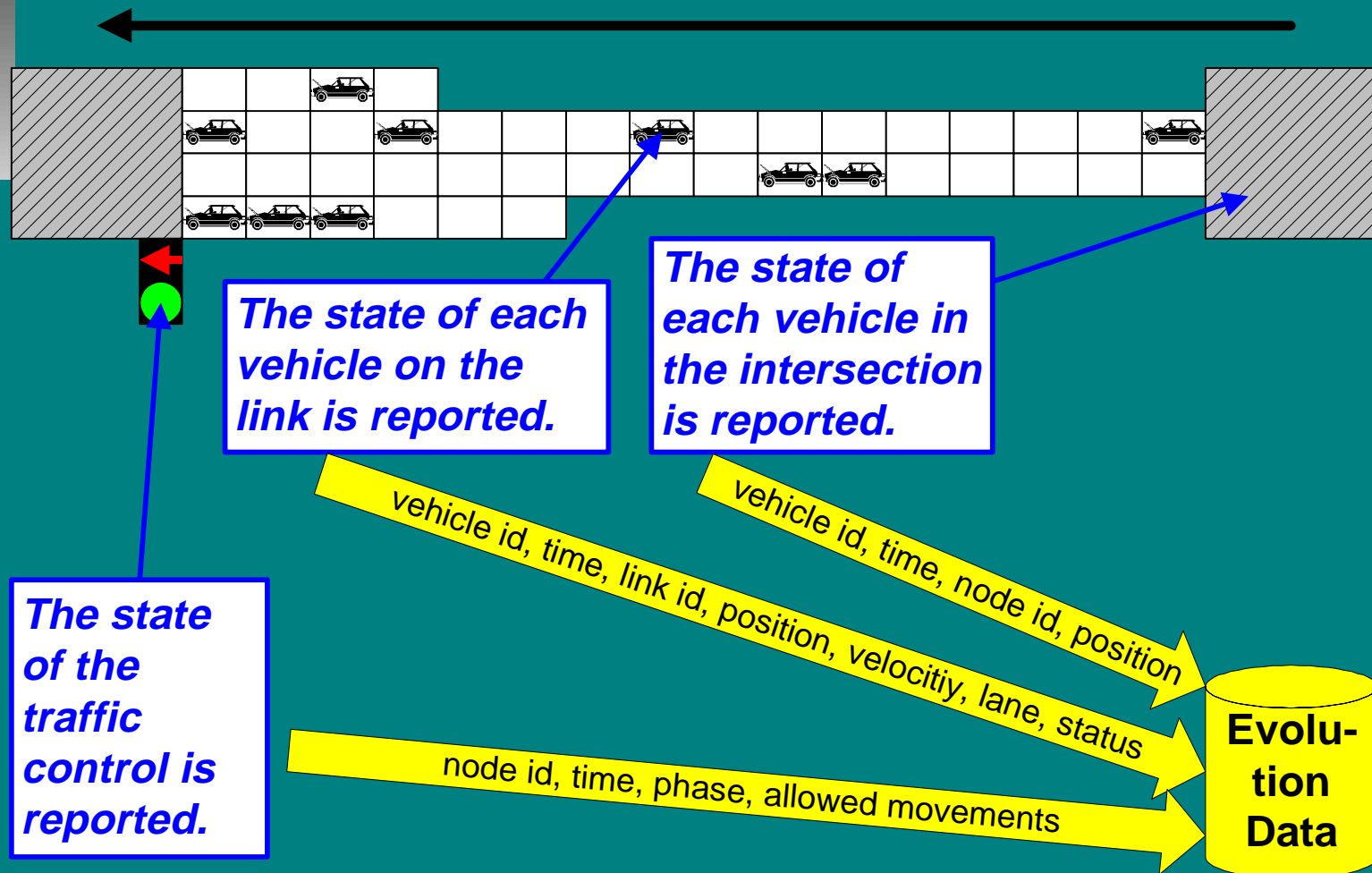
Utility subsystem

CPU → CA Microsimulation (CPN #1) → data → Simulation Output (CPN #1) ↔ Disk #1 (local)

CPU → CA Microsimulation (CPN #2) → data → Simulation Output (CPN #2) ↔ Disk #2 (local)

CPU → CA Microsimulation (CPN #3) → data → Simulation Output (CPN #3) ↔ Disk #3 (local)

Output Visualizer

Animation	← data	
Statistics	← data	Simulation Output
GIS	← data	
Plotting	← data	

Disk #1 (remote)

Disk #2 (remote)

Disk #3 (remote)

The state of each vehicle on the link is reported.

The state of each vehicle in the intersection is reported.

The state of the traffic control is reported.

vehicle id, time, link id, position, velocitiy, lane, status

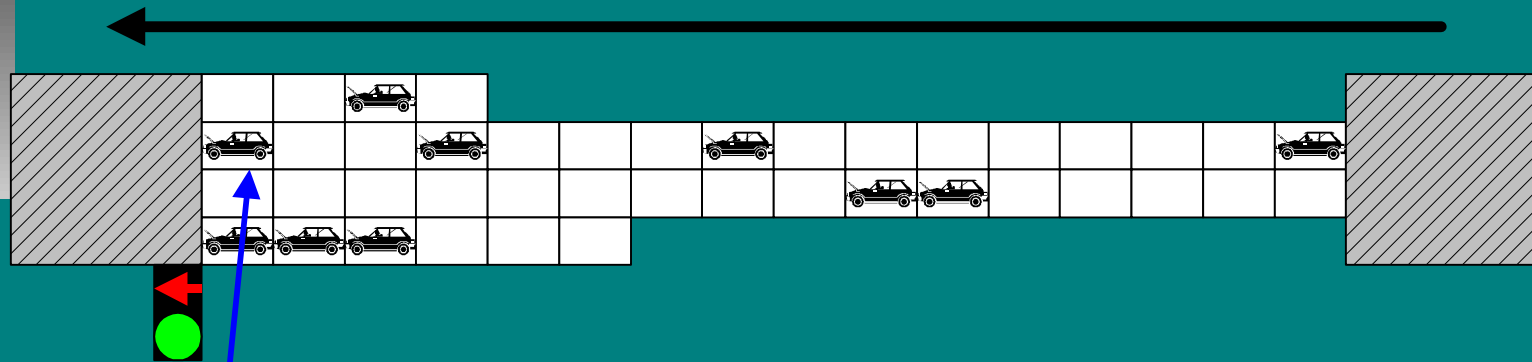vehicle id, time, node id, position

node id, time, phase, allowed movements
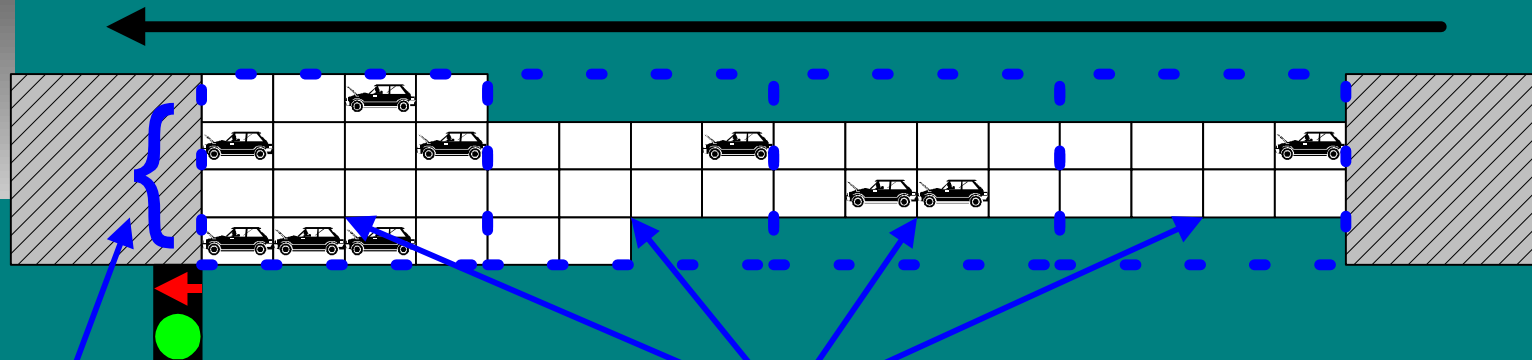
Evolu-tion Data

Event Data

The vehicle has just become lost because it cannot make the left turn it planned on making at this intersection. This event is reported.

vehicle id, time, link id, position, velocitiy, lane, status
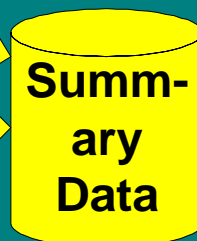
Event Data

The traversal times for vehicles that have travelled the length of the link are summarized.

The vehicle counts and velocities in "boxes" along the link are summarized.

link id, box position, vehicle count, sum of velocities

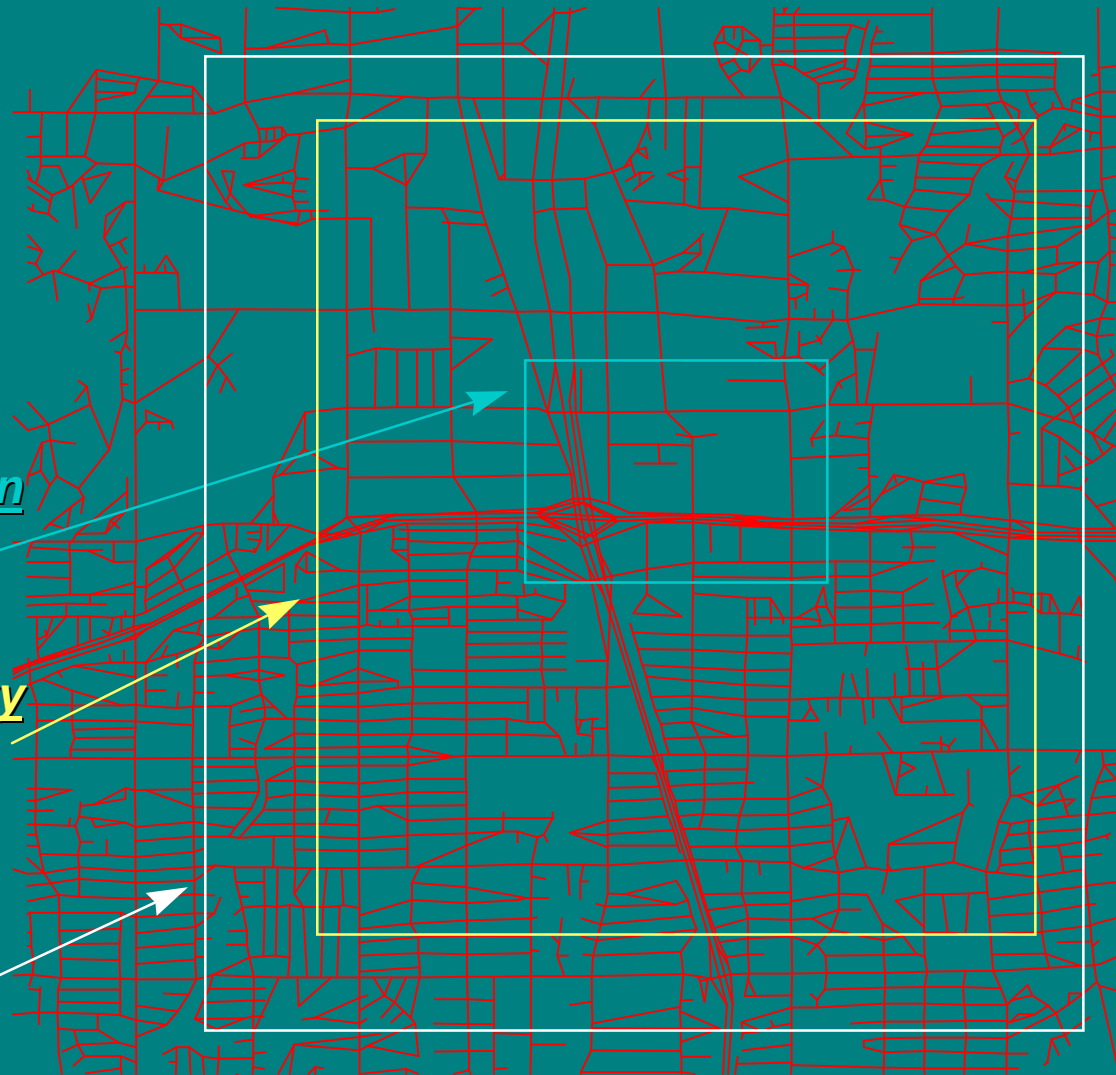link id, vehicle count, sum of travel times

Summ-ary Data

User Configurability

collect **evolution** data here from 8 AM to 9 AM

collect **summary** data here from 6 AM to 10 AM

collect **event** data here at all times

Summary of Simulation Output Capabilities

- **user configurable**
  - *choice of what to collect*
  - *possible filtering by space (nodes and links) and by time*
- **types of data collected**
  - *evolution data (collected for each time step)*
    - vehicles on links (location, velocity, and status)
    - vehicles in intersections (location)
    - traffic controls (phase and allowed movements)
  - *event data (collected when event occurs)*
    - vehicle status (lost vehicle, off plan, etc.)
  - *summary data (sampled and reported periodically)*
    - link travel times (count, mean, and variance of traversal time)
    - link densities (count and mean velocities in ℓ-meter "boxes")
- **distributed data collection (no computer network overhead)**
- **general capability (not tied to specific type of microsimulation)**